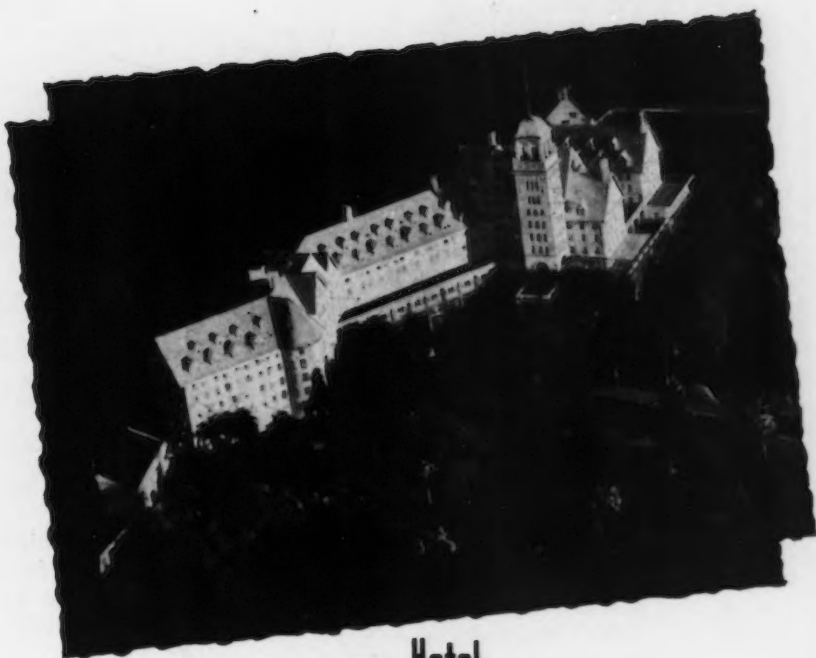


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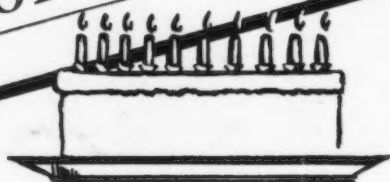
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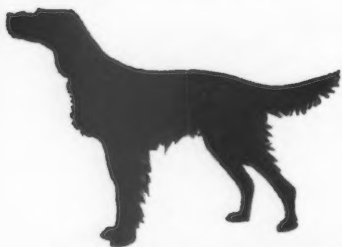
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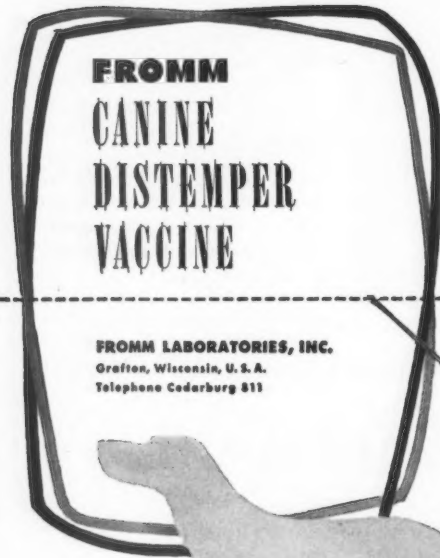


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For You, Doctor...



Farmer's Question Corner

PREPARED BY
American Foundation For Animal Health

The Great Milk Thief—Mastitis

QUESTION: Just what is the disease, mastitis?

ANSWER: Mastitis is an inflammation of the udder. Several kinds of germs can cause several types of infection in teats and udders. Injuries may also cause mastitis.

QUESTION: What are some common symptoms of mastitis?

ANSWER: If the teats are red, sore and may be discharging pus, there may be a discharge from the teats and the milk may be stringy. There are hundreds of these—laboratory tests and physical examination may be required for a sure diagnosis.

QUESTION: What treatment is required for mastitis?

ANSWER: Several types of treatment are available.



must be made first to find out what germs are causing the trouble. The correct treatment may be used to fight the cause. The important thing is to have a veterinarian check the animal at the first sign of trouble. Prompt action may save a cow's udders.

QUESTION: What can be done to prevent mastitis?

ANSWER: Good milking machines, properly adjusted correctly, sterilized clean equipment, milk injected into the udder with the veterinarian's aid, and a control plan along with the veterinarian's advice are necessary. Medication is necessary.

NOTE:—Due to space limitations, general questions cannot be handled in this column.



Farmer's Question Corner

PREPARED BY
American Foundation For Animal Health

Facts About Shipping Fever

QUESTION: What causes cattle to come down with shipping fever?

ANSWER: This disease is usually due to a combination of highly infectious agents. It affects millions of dollars worth of cattle annually.

QUESTION: Is it always brought on by shipping?

ANSWER: Not always, but usually. When cattle are shipped, they often suffer exposure to the elements, as well as exposure to germs. In a weakened condition, mingling with strange animals, they are easy prey for the infection.

QUESTION: How does an infected animal act?

ANSWER: It may refuse to eat; be "sore", have a high fever, may water, and breathing labored. If these symptoms show up, however, it's best to have a veterinarian's diagnosis. Similar symptoms are the early stages of hemorrhagic septicemia, and it's dangerous to make a mistake.

QUESTION: Is there an effective treatment?

ANSWER: By having the animals vaccinated at least two weeks before they are shipped. If the owner waits until shipping time, a different type of vaccination is indicated.

QUESTION: After the animals arrive at their destination, are any further precautions necessary?

ANSWER: Newly-arrived cattle should get plenty of rest, shelter from cold rain or snow, and careful feeding. They should be isolated from the home herd for three weeks. Protective serum may be needed quickly if any animals sicken. Exact protective measures in each instance should be determined by the veterinarian.

NOTE:—Due to space limitations, general questions cannot be handled in this column.



Farmer's Question Corner

PREPARED BY
American Foundation For Animal Health

The Nation's Worst Swine Killer

QUESTION: What disease kills the most swine in America?

ANSWER: Hog cholera is by far the worst killer. It destroys about \$30,000,000 worth of hogs a year.

QUESTION: What caused it?

ANSWER: A virus—too small to be seen even under a microscope. The amount you could get on the point of a pin could kill an entire herd of hogs.

QUESTION: Can you tell when a hog has cholera?

ANSWER: That's one of the worst things about hog cholera—a number of other malodorous symptoms like it. Usually the first symptoms of cholera include loss of appetite, fever, weakness and prostration. Pigs may start dying rapidly.

QUESTION: Can cholera be cured?

ANSWER: There is no cure.

Prevention is the only answer. Hog cholera lotus can be cut down to almost nothing by proper vaccination of pigs around weaning time.

QUESTION: Any special points to bear in mind about vaccination?

ANSWER: Yes. Only healthy pigs in good condition should be vaccinated. Other virus may cause bad reactions. A vet examination should always determine whether or not the pigs are in proper condition for vaccination. Another important point is that the virus is dangerous and should be handled only by someone who knows how; and one who understands sterilization of equipment and other precautions.

NOTE:—Due to space limitations, general questions cannot be handled in this column.

HERE is another of the new features telling the story of veterinary service in over 2,600 newspapers, coast to coast. This year-round public relations campaign for the profession now embraces pictures, cartoons, news articles, farm journal advertisements, radio, and motion pictures . . . to tell YOUR story . . . to help increase your practice.

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JUNE CONVENTION PROGRAM SPEAKERS

DR. W. S. GOCHENOUR



Dr. W. S. Gochenour is Director of the Biological Laboratories of the Pitman-Moore Company, Division of Allied Laboratories, where he has been directing the production of Biologics for Veterinary use and production of Biologics for Human use and biological research since 1938.

Dr. Gochenour graduated from the University of Pennsylvania's School of Veterinary Medicine in 1913. He was in general practice from 1913-1915. From 1915 to 1938 he was with the U. S. Bureau of Animal Industry where he did meat inspection, virus serum inspection, biologics control testing, and research on diseases of animals.

Dr. C. D. Van Houweling has been with the AVMA Executive Staff since December 1, 1948, where he has accomplished extensive public relations projects. He has worked closely with constituent veterinary societies, agricultural leaders, livestock producers' groups, and other related organizations.

Farm raised near Pella, Iowa, Dr. Van Houweling received his veterinary degree from Iowa State College in 1942, entered private practice for 1½ years, joined the Army Veterinary Corps for three years as inspecting officer at quartermaster market centers. Later he joined the staff of the Illinois Agricultural Association in Chicago as director of Veterinary Medical Relations where he stayed until he accepted the AVMA appointment.



DR. C. D. VAN HOUWELING

DR. HERBERT G. JOHNSTONE



Dr. Herbert George Johnstone is the Associate Professor of Medical Parasitology at the University of California Medical School. He is in charge of the Parasitology and Mycology Section of the Division of Medicine, Director of the Tropical Diseases Laboratory, Consulting Parasitologist for the University of California Hospital and Out Patient Department, Consulting Parasitologist for the California State Board of Health, a member of the Committee established by the State Board of Health to govern the examination, licensing and welfare of laboratory technicians in Northern California.

Dr. Johnstone received his Ph.D. from the University of California in Zoology—Protozoology. He was previous to his present appointments: Research Associate in Tropical Medicine, Hooper Foundation, Instructor in the Department of Bacteriology in the Medical School in the College of Pharmacy and the College of Dentistry. Assistant Professor of Bacteriology in the Medical School in the College of Pharmacy and the College of Dentistry.

Dr. Salvatore Lucia has been on the faculty of the Medical School of the University of California since 1947.

Dr. Lucia received his M.D. degree from the University of California Medical School in 1930. He was awarded a National Research Council Fellowship and spent the eighteen following months in Naples, Italy, and London, England. He has published about ninety papers on various medical subjects.



DR. SALVATORE LUCIA

DR. WAYNE H. RISER



Dr. Wayne H. Riser is Executive Secretary of the American Animal Hospital, Associate Editor of the "Journal of the American Veterinary Medical Association," Vice President of the Midwest Small Animal Association, member of the Executive Board of the Illinois State Veterinary Medical Association, and charter member of the American College of Veterinary Pathologists.

Dr. Riser graduated and received his D.V.M. from Iowa State College in 1932, and his M.S. in Veterinary Pathology from Iowa State College in 1945. He was in general practice in Glenwood, Iowa, from 1932 to 1937, in practice in Des Moines, Iowa from 1937-1946, did editorial and research work for the "North American Veterinarian" from 1946 to 1948 and has run the Riser Animal Hospital in Skokie, Illinois, since that time.

Dr. F. X. Gassner is with the Endocrine Section of the Experiment Station of Colorado A & M College at Fort Collins, where he holds the title of (Directing) Professor of Endocrine Research.

Dr. Gassner received his D.V.M. from Colorado State College in 1937 and his M.S. from Colorado University School of Medicine in 1944. He did teaching-research from 1937 to 1945 in the Division of Veterinary Medicine, Graduate School until he went with the Experiment Station.



DR. F. X. GASSNER

Aureomycin "Wonder" Drug

Aureomycin, the "wonder" drug used by doctors to fight human diseases, has now been found to produce a remarkable increase in poultry and hog growth when added to feeds. This announcement was made by Lederle Laboratories Division, American Cyanamid Company, Pearl River, N. Y.

Research workers at Lederle stated that the speed-up in growth caused by giving hogs and poultry feed containing Lederle's Animal Protein Factor Feed Supplement (APF No. 5), which has been available for many months, increased growth by as much as 50 per cent. Five pounds of the Aureomycin-processed supplement provides sufficient APF for a ton of poultry mash. This poultry supplement is available in both dry and liquid forms. The supplement is added in a larger quantity when used for hog feed.

Lederle spokesmen emphasized that the new material is available only from feed manufacturers, and cannot be ordered directly from Lederle Laboratories. Most feed men, they added, can supply detailed information on the supplement, but if further data is needed, it can be obtained from the Animal Feed Department, Lederle Laboratories Division, American Cyanamid Company, 30 Rockefeller Plaza, New York 20, N. Y.

AVMA Eighty-seventh Annual Meeting Miami Beach, August 21-24, 1950

Arrangements for the Miami Beach Meeting, August 21-24, are almost completed. The Literary and Entertainment Schedules indicate that it is going to top all previous AVMA meetings. Literary sessions 1950 streamlined to give a condensed but complete story on everything new in Veterinary Medicine, are sure to win favor with all registrants. Scientific papers will tell developments in Veterinary Medicine. It is expected that more than 50 exhibits will be displayed. Dr. S. C. Wasman of Miami Beach, Housing Chairman for the Convention, has urged members to make reservations immediately for their stay in Miami Beach.

For recreation, golfers will have their day at the AVMA Tournament. Among other things to do will be swimming, fishing, sightseeing by boat, visits to the nearby Fairchild Tropical Garden and the Everglades National Park, also night clubs and theatres.

Summer Employment

There are a number of Veterinary students at Davis who desire summer employment available for work from June 15th to September 10th. Contact your secretary if interested.

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THE CALIFORNIA VETERINARIAN

MAY-JUNE, 1950

Contents

June Convention Program Speakers.....	9	Welcome, Women's Auxiliary to the CSVMA.....	18
Aureomycin "Wonder" Drug.....	10	Program, Annual Convention, CSVMA, Berkeley,	
AVMA Eighty-seventh Annual Meeting.....	10	June 26, 27, 28, 1950.....	16, 17
Summer Employment.....	10	Physiology of the Ruminant Stomach in Relation	
CSVMA Annual Meeting.....	12	to Bloat and Feed Consumption by H. H. Cole...	19
Exhibits.....	12	Dr. S. T. Michael Scholarship.....	23
Report of an Unusual Canine Uterine Neoplasm		Portrait of Dr. Clarence Haring.....	23
by C. J. Padfield and R. F. Burns.....	13	wanted! More Information About Reportable Dis-	
Convention Housing.....	13	eases by B. T. Woodward.....	23
News of San Diego County Veterinary Medical		Notes from the A.A.H.A. Meeting, April 25-28, 1950,	
Association.....	14	Denver, Colorado.....	24
Livestock Diseases Reported by A. K. Carr.....	14	Opportunities.....	25
Common Diseases of Mink in California by John		In Memoriam.....	25
R. Gorham.....	15	CSVMA Committees.....	26
Applicants.....	15	The Davis Meeting.....	26
New Directory Published by AVMA.....	18	Local Associations.....	27
Berkeley Accommodations Available.....	18		

Index to Advertisers

Ashe Lockhart, Inc.	28	Jensen-Salsbery Laboratories, Inc.	Back Cover
Associated Serum Producers.....	6	Lederle Laboratories Division.....	29
H. C. Burns Co.	12	National Casualty Co.	5
Calo Dog Food.....	Inside Front Cover	Norden Laboratories.....	3
Central City Chemical Consolidated.....	5	Pitman-Moore Co.	31
Fort Dodge.....	7	Sharp & Dohme	8
Fromm	4	Sunbeam	10
Haver-Glover Laboratories.....	30		

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Volume 3

Number 5

Published Bi-Monthly by the California State Veterinary Medical Association, 3004 16th Street, San Francisco 3, California. Devoted to promote Veterinary Science, to increase the esteem of the general public for the Veterinarians, to protect his rights and privileges and to elevate the standard of the profession generally in scientific intercourse. Address all communications to The California State Veterinary Medical Association, Charles S. Travers, Executive Secretary. Please notify us immediately of incorrect or change of address.

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CSVMA Annual Meeting June 26-28, Berkeley, Calif.

Make your plans now to attend the Sixty-second Annual Meeting of your Association. Headquarters for all activities will be the Hotel Claremont. Housing for delegates will be the Hotel Shattuck and Hotel Durant. Registration will be in the main lobby of the Hotel Claremont, Monday, June 26, 9:00 a.m., and throughout the day, and on Tuesday, June 27, 1950.

General sessions open Monday, June 26, 1:30 p.m., in the Florentine Room. The Small Animal Meeting will be held in the Emerald Room. The Large Animal Meeting will be held in the Blue and Gold Room. The Ladies Luncheon will be held in the Lido Deck, Monday, June 26. The Banquet and Entertainment will be held in the Florentine Room, with dancing in the Garden Room.

Housing: Hotel Shattuck is headquarters for the housing of delegates. Make your reservations at your earliest convenience with Mr. W. E. Morris, giving the number of people in your party, the type of room desired and the time of arrival. Send a \$5 deposit with your request.

Rates: Single with bath, \$3.50 to \$5.00. Double with bath, \$5.00 to \$6.50. Twin beds, \$6.50 to \$8.00. Suites, \$9.00 to \$12.00.

Arrangements have also been made with the Hotel Durant, Mr. J. D. Blair, Resident Manager. **Rates:** Single with bath, \$3.50 to \$6.00. Double with bath, \$5.00 to \$8.00. Twin beds, \$6.00 to \$8.00. Suites, \$10.00 to \$12.00, and the California Motel, Mrs. Lucille Ellis, rate per room \$4.50 to \$6.00. Send a \$5 deposit with your request.

Make Your Reservations Early!

Transportation: We have made special arrangements with the Southern Pacific Company to take care of the transportation situation. Call:

San Francisco: Mr. E. H. Hagaman, Douglas 2-1212, Ext. 2583.

Oakland: Mr. E. Milliken, Templebar 2-2121, Ext. 2172.

Los Angeles: Mr. M. W. Sidle, Michigan 6161, Ext. 2704.

San Diego: Mr. M. L. Adler, Main 7111.

EXHIBITS

Exhibits will be displayed along the spacious foyer of the Hotel Claremont, providing an excellent opportunity for our members to discuss subjects of mutual interest with representatives of the companies which supply biologics, pharmaceuticals and instruments to our practitioners.

Report of an Unusual Canine Uterine Neoplasm

By C. J. PADFIELD, D.V.M. and R. F. BURNS, D.V.M., San Diego, Calif.

A Boston Terrier bitch, eleven years old, was presented for examination showing extreme abdominal distension accompanied by a marked dyspnea. The patient showed no other clinical symptoms other than the presence of a large palpable mass filling the abdominal cavity. The owner stated that the abdominal distension had started not more than two weeks before, and was increasing daily. Appetite and eliminations had been normal until two days prior to presentation. A tentative diagnosis of pyometra was made, to be verified by blood and X-Ray examination.

The blood picture seemed contrary to the pyometra diagnosis, with only very slight elevation in leukocytes and other components being relatively normal. However, it was noted that juvenile leukocytes were increased on a differential count. X-Ray examination showed an opaque mass filling the abdominal cavity. It was then decided that the mass must be a tumor, although its size was almost unbelievable.

Surgery was decided upon, and after routine preparation the patient was given sodium pentobarbital anesthesia. A laparotomy incision was made along the median line. Upon exposure of the massive uterus it was found to be firm to the touch and apparently devoid of fluid; puncture with an 18-gauge needle allowing aspiration of only a small amount of normal appearing serum. The incision was then enlarged to permit removal of the uterus and ovaries. Following the operation the animal made an uneventful recovery and to date has shown no signs of metastatic progress of the tumor.

Examination of the tumor showed it to be confined to the body of the uterus, with the cornuae and ovaries appearing normal. An incision through the uterine wall revealed large, firm, lobular growths involving all of the endometrium, as can be seen from the illustration. The entire mass weighed almost two pounds, and measured slightly over six inches in diameter. The unusually large size in relation to the patient can be gathered from the photograph.

The specimen was forwarded to a local pathologist¹ for identification, who in turn sent

¹Dr. Rawson J. Pickard, San Diego, California. it to the Armed Forces Institute of Pathology in Washington, D. C. because of the unusual pathological condition present. The report from this laboratory follows:

"This is indeed an unusual specimen, and there is some doubt as to the correct interpretation of the lesion. The greatly thickened endometrium seems to be the result of proliferation of glands as well as stroma. In some



Picture courtesy of the Armed Forces Institute of Pathology.

Tumor removed from dog.

places islands of endometrial glands surrounded by stroma are seen deep in the myometrium. Descriptions of this lesion have not been found in literature. One possibility is that this is the canine counterpart of adenomyosis."

Convention Housing

The situation in the Bay area on housing of delegates to the annual meeting June 26-28 is very serious.

The American Medical Association meets in San Francisco on these dates and have spoken for all available room in San Francisco. The Tourist Bureau of San Francisco has tied up a lot more in Berkeley. Besides this there are two small conventions in Berkeley at this time which does not help matters.

Arrangements have been made for all available rooms at the Hotel Shattuck and Hotel Durant. They want these reservations taken up by June 15th. Therefore, please send in your reservation with a \$5.00 deposit **right away**. Time of arrival, kind of accommodation; if alone will you be willing to double up? Act now.

News of San Diego County Veterinary Medical Association

This past season has been one of the most successful so far for this group. It has been most gratifying to notice the increased interest and cooperation during the past year, and some of the more important accomplishments follow.

By unanimous vote the annual dues were increased from two dollars to fifteen dollars for owner-practitioners, and to five dollars for employed veterinarians. This has substantially increased the treasury, and has made possible the presentation of much better programs than in the past; and the association is now in a more favorable position to meet any unforeseen exigency that may arise.

During recent reading of a most rigid anti-noise ordinance by the City Council of San Diego, an attorney was hired by the small-animal practitioners to represent their interests. As a direct result of this, there was written into the ordinance a section stating that, "noises from pet hospitals do not constitute a nuisance, but are to be regarded as an occupational noise." By this example of close cooperation, veterinarians practicing in the city were spared the possible drastic consequences that passage of such an ordinance might have, had they not been represented.

A voluntary program for Rabies vaccination has just been worked out by the Association. Once or twice a year, a "Rabies Vaccination Week" will be held, during which time practitioners will voluntarily reduce their fee for this service to one dollar. The County Livestock Department has agreed to undertake a publicity campaign to make the public aware of the need for vaccination. This program it is felt will keep the Rabies vaccination with the veterinarian, and eliminate the possibility of its getting into less qualified personnel.

We are happy to report that Dr. Paul Carlson, for whom so many of our members donated blood last month (as reported in the March-April issue of the magazine), is now fully recovered and back at his practice.

The group discussed the possibility of inviting the State Association to San Diego for the summer meeting in 1953. This will be a big year in San Diego, as the "World's Fair" will be held that year in Balboa Park, with all indications pointing to one of the finest expositions ever.

We urge that you send your hotel deposit in by June 15th. There are other conventions in the bay area scheduled for approximately the same time as ours, and the hotel managers have requested their deposits in advance.

Livestock Diseases Reported

DR. A. K. CARR, *Administrator*
Division of Animal Industry, State Dept.
of Agriculture, Sacramento, California

Tabulation of Diseases reported to the State Division of Animal Industry during the period January to April Inclusive 1950, also a Summary of the Reports for the Previous Eight Months.

	Jan.-Apr., incl., 1950			Previous 8 Months May-Dec., incl., 1949		
	North	Central	South	North	Central	South
Actinomycosis		1		2	1	
Anaplasmosis	3	1	4	13	4	5
Anthrax, Cattle				7	3	1
Hogs	1			3		
Sheep				3	1	1
Bovine bac. hemoglobinuria				7	1	
Bovine trichomoniasis				3		
Braxy, Sheep		1				
Coccidioid granuloma		6			9	
Coccidiosis, Cattle					1	
Sheep	1			1	2	
Contagious ecthema, Sheep				4	3	
Cysticercus, bovis		2	1	1	2	3
Equine encephalomyelitis			1	141	73	54
Foot rot, Cattle				1	1	
Sheep	1			1	2	
Hog Cholera	9	12	7	23	11	10
Infectious keratitis, Calves		2				
Infectious pneumonia, Calves					1	
Johne's disease, Cattle		1		2	1	
Sheep	1			1		
Leptospirosis, Cattle		2				
Listerellosis, Sheep						1
Malignant edema, Cattle		1		1	2	1
Swine				1		
Mycotic stomatitis, Cattle		1			3	1
Paratyphoid infection, Hogs		1		2		
Chorioiditis, Cattle		1				
Swine erysipelas	1		1		3	
Texas fever ticks						5
Vesicular exanthema swine	5	36	20	9	34	9

Common Diseases of Mink in California

By JOHN R. GORHAM, D.V.M., M.S.*

Although the state of California is not one of the leading producers of mink pelts, there are a number of ranchers scattered about the state, with the greatest concentration at Eureka, Los Angeles, and the Bay Area. Like any animal, mink are subject to different disease entities. To acquaint the practitioner, who might occasionally have an opportunity to observe diseases in mink, we have prepared a brief discussion.

Distemper is dreaded by mink ranchers. Untold numbers of ranchers have lost thousands of dollars or have been forced out of business because of this malady. The virus is usually introduced into a susceptible herd by the purchase of new breeding stock or the presence of a dog with distemper.

The incubation period in mink distemper is usually about 7 to 14 days in typical cases. The onset is evidenced by excessive blinking of the eyes. The eyelids become swollen, the nose dry and crusty, followed by a mucopurulent exudate from the eyes. Soon one or both eyes stick shut. Anorexia and lassitude are usually seen at this time. Later in the disease the foot pads may swell to as much as twice the normal size. On the surface of the pad, a branny exudate may be noted. As soon as the disease is diagnosed on a ranch, all animals showing symptoms should be removed and isolated. The remainder should be inoculated with a killed tissue vaccine. In many cases the entire ranch has been exposed before vaccination, and a guarded prognosis should be given.

Pan-steatitis, known to the industry as "yellow fat disease," is a disease of young mink characterized by a non-suppurative inflammation of the depot fat and a subcutaneous edema. The malady is often seen on ranches where the ration consists of a high percentage of meat and fish scrap that has been in storage longer than 6 months. Rancidity of the fish scrap and horse meat caused by prolonged storage may be a factor in this entity.

This disease is usually diagnosed as necropsy. The subcutaneous and visceral fat has a characteristic brownish-yellow color. The spleen is often enlarged and mottled. On ranches where the disease is in progress, we have had success in arresting the disease by changing the ration so that it contains a large amount of unfrozen horse meat and about 10-15 per cent fresh liver.

Botulism is a spectacular disease in that hundreds of mink may succumb within a short period of time following the feeding of

poisoned food. The clinical picture is characteristic. The animal shows ataxia, progressive paralysis, abdominal breathing, with a short comatose period before death.

Polyvalent antitoxin containing antitoxic units against *Clostridium botulinum* Types A, B, C should be administered as soon as possible to all the survivors. Depending upon the size of the animal, doses ranging from 4 to 8 cc. should be administered.

Heat exhaustion may also cause a large mortality, especially in young mink. If the female is whelping and the weather is excessively hot and humid with no air currents, the newborn kits die rapidly. The female does not clean them properly and is in considerable distress herself. She may lie in the doorway of the nest box, shutting off any air currents which might enter. The nest box then becomes an oven and the kits are suffocated.

If the yard is small, large lawn sprinklers are helpful in cooling the area. Overhead pipe sprinklers such as those used in nurseries, can be placed in the yards where large numbers of mink are held. When sprinkling, none of the cold water should be allowed to fall on the young kits, for the sudden shock itself might kill them.

Hydrocephalus is frequently seen in young mink. It probably is a hereditary lethal factor caused by a recessive gene. Recommendations to the rancher to provide maximum control under practical conditions should include pelting of the dam, the sire, and the litter mates to the hydrocephalic kitten, since both the sire and the dam will carry the gene, and all or most of the litter mates may carry it.

A number of other conditions that occur in mink require further investigation, such as urinary calculi, nutritional anemia and enteritis of viral and nutritional origin. In particular, more complete information is needed about the actual nutritional requirements of mink for application to prevention and treatment of diseases of nutritional origin.

APPLICANTS

Albert Batista, Bakersfield—Vouchers: Richard Stiern, Leon Ackermann.

Peter Lustig, Stockton—Vouchers: A. J. Whitaker, C. D. Hoover.

R. T. Williams, Santa Barbara—Vouchers: E. H. Houchin, J. J. Ridgway.

W. D. Woodward, Modesto—Vouchers: V. E. Graff, W. W. Worcester.

William Hulbush, San Luis Obispo—Vouchers: C. Edward Taylor, J. R. Whitman.

John S. Orsborn, Jr., Half Moon Bay—Vouchers: C. Edward Taylor, F. E. Reddert.

*From the Fur Animal Disease Research Laboratory, U. S. Department of Agriculture, Bureau of Animal Industry, in cooperation with the Department of Veterinary Science, Washington Agricultural Experiment Stations, State College of Washington, Pullman.

Program—Annual Convention California State Veterinary Medical Association

HOTEL CLAREMONT

Guest Speakers

- F. X. Gassner, D.V.M., M.S., Professor of Endocrine Research, Endocrine Section, Experiment Station, Colorado A. & M. College, Fort Collins, Colorado.
- W. S. Gochenour, V.M.D., Director, Biological Laboratories, Pitman-Moore Company, Zionsville, Indiana.
- H. W. Johnson, D.V.M., Professor of Veterinary Surgery, Veterinary Hospital, Colorado A. & M. College, Fort Collins, Colorado.
- M. R. Miller, M.S., Chemist, Experiment Station, University of Nevada, Reno, Nevada.
- J. D. Ray, B.S., D.V.M., Director, Biological Department, Corn States Serum Company, Omaha, Nebraska.
- W. H. Riser, D.V.M., M.S., Practitioner, Skokie, Illinois.
- C. D. Van Houweling, D.V.M., Director of Professional Relations, American Veterinary Medical Association, Chicago, Illinois.
- L. R. Vawter, D.V.M., M.S., Associate Professor in Veterinary Medicine, University of Nevada, Reno, Nevada.

Participating Staff University of California

- H. S. Cameron, D.V.M., Ph.D., Professor of Veterinary Science, School of Veterinary Medicine, Davis.
- P. T. Cupps, Ph.D., Assistant Professor in Animal Husbandry, Division of Animal Husbandry, Davis.
- J. R. Douglas, Ph.D., Assistant Professor of Parasitology, School of Veterinary Medicine, Davis.
- J. B. Enright, Ph.D., Professor of Veterinary Public Health, Davis.
- E. H. Gray, M.D., Radiologist at the Woodland Clinic and Lecturer in Radiology in the School of Veterinary Medicine, Davis.
- P. W. Gregory, B.S., M.S., Sc.D., Professor of Animal Husbandry, Division of Animal Husbandry, Davis.
- T. J. Hage, D.V.M., M.S., Assistant Veterinarian in Experiment Station, Davis.
- H. G. Johnstone, Ph.D., Associate Professor of Medical Parasitology, Medical School, The Medical Center, San Francisco.
- M. Kleiber, D.Sci., Professor of Animal Husbandry, Division of Animal Husbandry, Davis.
- S. P. Lucia, M.D., University of California Hospital, San Francisco.
- K. G. McKay, B.S., D.V.M., M.S., Extension Veterinarian, Berkeley.
- A. S. Rosenwald, D.V.M., Extension Specialist in Poultry Pathology, Berkeley.

Division of Animal Industry State Department of Agriculture

- P. D. DeLay, Live Stock Pathologist, Sacramento.
- S. L. Jamison, Veterinarian, Sacramento.
- C. Edward Taylor, Live Stock Disease Control Specialist, San Luis Obispo.

State Department of Public Health

- B. H. Dean, D.V.M., Chief of Veterinary Public Health, San Francisco.
- G. Humphrey, D.V.M., San Francisco.

EXHIBITS

Firms will exhibit along the spacious floor of the Section. Here is your opportunity to discuss subjects of the following companies:

H. C. Burns
Kuehn Milling Co.
S. E. Massengill Co.
Sharp & Dohme
Jensen Salsbery
Hill Packing Co.

Participating Veterinarians

- S. A. Fuller, B.S.Agric., D.V.M., Arcata.
- E. C. Jones, D.V.M., Los Angeles.
- J. M. King, D.V.M., San Jose.
- H. I. Ott, D.V.M., Norwalk.
- R. E. Philbrick, D.V.M., Riverside.
- E. R. Quortrup, D.V.M., San Diego County Live Stock Inspector, San Diego.
- W. J. Zontine, D.V.M., Lancaster.

* * *

PROGRAM

JUNE 26, 1950—MONDAY

GENERAL SESSION

Morning

Claremont Hotel

- 9:00 A.M.—Registration.
- 9:00 A.M. to 12:00 Noon—Executive Committee Meeting.

Afternoon

Florentine Room

E. C. JONES, Chairman

- 1:30—Opening of the Meeting.
Address of Welcome.
Response—F. P. Wilcox, President, California State Veterinary Medical Association.
- 2:00—Canine Encephalidities B. Dean, J. B. Enright, T. J. Hage, Moderator
- 2:30—Diseases of Fur Bearing Animals—Illustrated E. R. Quortrup
- 3:15—Bovine Leptospirosis in California C. E. Taylor, Stanton Jamison, P. D. DeLay
- 4:00—Diseases of the Heart S. P. Lucia

Evening

Florentine Room

- 7:30—Annual Business Meeting of the California State Veterinary Medical Association.

Medical Association, Berkeley, June 26, 27, 28, 1950

CLAREMONT

HIBITS

toys of the hotel leading to the Large Animal
subjects of mutual interest with representa-

Fitman Moore
ederle Laboratories
entral City Chemical Consolidated
Calo Dog Food Company, Inc.
Medical Specialties Company
The Quaker Oats Co.

Program Committee

C. E. Wicktor, Chairman

H. F. Carroll T. J. Hage
M. C. Coons R. V. Jessup

Local Committee on Arrangements

B. F. Murray, Chairman

T. A. Berry R. P. Cope
W. W. Brimer E. G. LeDonne
G. K. Cooke I. M. Roberts

* * *

JUNE 27, 1950—TUESDAY

SMALL ANIMAL SECTION

Morning

Emerald Room

H. I. OTT, *Chairman*

- 8:30—Motion Picture, "Combined Abdomino-Perineal Resection."
9:00—Applied Endocrinology in Small Animal Medicine—Illustrated
..... F. X. Gassner
10:00—Diseases of the Kidney—Illustrated
..... W. H. Riser
10:45—Parasitology and the Small Animal Clinician J. R. Douglas, T. J. Hage
11:15—Survey of Rabies Activities in California G. Humphrey
12:00—Lunch Session. Large and Small Animal questions and answers
..... Moderator, H. F. Carroll

Afternoon

R. E. PHILBRICK, *Chairman*

- 1:30—Posterior Paralysis in the Dog—Illustrated W. H. Riser
2:30—Some Interesting Cases in the Small Animal Clinic of the University of California School of Veterinary Medicine T. J. Hage
3:00—Report on the American Animal Hospital Association Meeting at Denver E. C. Jones
3:45—Protozoan Diseases .. H. G. Johnstone

JUNE 27, 1950—TUESDAY

LARGE ANIMAL SECTION

Morning

Blue and Gold Room

S. A. FULLER, *Chairman*

- 8:30—Motion Picture, "Combined Abdomino-Perineal Resection."
9:00—Halogeton Glomeratus—A Range Plant Poisonous to Sheep and Cattle—Illustrated M. R. Miller, L. R. Vawter
Presented by L. R. Vawter
9:30—Fractures and Their Treatment in the Horse and Bovine H. W. Johnson
10:15—Differential Diagnosis in Swine Practice J. D. Ray
11:00—Applied Endocrinology in Large Animal Medicine—Illustrated
..... F. X. Gassner
12:00—Lunch Session. Large and Small Animal questions and answers Moderator, H. F. Carroll

Afternoon

W. J. ZONTINE, *Chairman*

- 1:30—White Muscle Disease of Calves and Lambs—Illustrated L. R. Vawter
2:00—Diseases and Surgical Techniques in the Bovine H. W. Johnson
3:00—Bovine Sterility Moderator, K. G. McKay
Variations in the Estrous Cycle and Breeding Efficiency . . P. T. Cupps
Hereditary Sterility in Cattle
..... P. W. Gregory
Isotopes as Metabolic Tracers. A New Tool for Metabolic Research
..... M. Kleiber

Evening

Florentine Room

J. M. KING, *Master of Ceremonies*

- 7:30—Banquet.
Entertainment, Dance.

* * *

JUNE 28, 1950—WEDNESDAY

GENERAL SESSION

Morning

Florentine Room

H. S. CAMERON, *Chairman*

- 8:30—Motion Picture, "Transplantation of the Ureters."
9:00—Recent Advances in the Field of Biology W. S. Gochenour
10:00—Some Considerations of Biological and Diagnostic Applications of X-Ray
..... E. H. Gray
10:45—Motion Picture, "Avian Cecal Coccidiosis" Comments by A. S. Rosenwald
11:15—Building Professional Recognition Through the AVMA
..... C. D. Van Houweling
11:45—Changing Agriculture, Colored Slides
..... Kenneth G. McKay
Those interested in driving to Davis to tour the Veterinary College are cordially invited by Dean George Hart of the College to be guests of a tour conducted on the campus at 4 o'clock, June 28, 1950, Davis, California.

New Directory Published by AVMA

The AVMA has announced publication of its new 1950 Directory, containing the most complete listing of veterinarians ever assembled.

Names, addresses, and other pertinent information on 14,000 veterinarians in the United States and Canada, and of 350 in other countries, are listed geographically in the 1950 edition, and an alphabetical list is provided for quick reference.

Also included is detailed information about colleges of veterinary medicine, not only in the United States and Canada, but throughout the world. Among other principal features of the 288-page directory are listings of secretaries of veterinary medical and related associations, chief livestock sanitary officials, organization and key personnel of all United States and Canadian government veterinary services, digests of practice acts, veterinary science departments in land-grant colleges, code of ethics, and complete data on the organization of the AVMA.

Although the association's central office keeps up-to-date records on its 10,000 members, obtaining information on the 4,000 non-members listed in the 1950 edition was a major project that took much time and correspondence and constant checking.

AVMA officials estimate that there are still approximately 1,500 non-members in the United States and Canada on whom it has not been possible to get information, despite repeated efforts to contact them. They point out that it is to the advantage of every qualified person to be listed, because hundreds of people outside of the profession refer to this directory in checking the professional standing and qualifications of individual veterinarians.

Copies of the 1950 edition may be obtained from the AVMA office, 600 S. Michigan Ave., Chicago 5, Ill. Price to members is \$2.00; to non-members, \$10.00.

Berkeley Accommodations Available

The Secretary's office has received word, through the Women's Auxiliary, that some of the members are not planning to attend the Annual Meeting in Berkeley, because they feel that accommodations will not be available, due to the fact that the American Medical Association are holding their Convention in San Francisco on the same dates. This office wishes to assure you that **you will be taken care of. Send in your reservation, at once,** to Mr. Morris, Hotel Shattuck, or to Mr. Blair, Hotel Durant. **DO IT NOW.**

Welcome, Women's Auxiliary To the CSVMA

The Women's Auxiliary to the CSVMA extends a most cordial greeting to the wives of veterinarians in California and urges them to participate in the annual meeting of the organization in Berkeley.

The Committee on Local Arrangements has planned a number of events especially for the women and it is our hope that you will attend all of them.



MRS. G. N. MILLER

Monday at noon there will be a luncheon on the Lido Deck and a business meeting at the Claremont Hotel and we most cordially invite the wives of all veterinarians to be present. Monday evening there will be a card party. Tuesday there is a sight-seeing tour in the offing, and Tuesday evening is the banquet, entertainment, and dance. There are so many things to see, hear, and talk about, we anticipate an unusually happy and interesting meeting.

With the help of the CSVMA officers, Mrs. E. V. Edmonds, Vice-President, Mrs. H. I. Ott, Secretary-Treasurer, and the local auxiliaries we have had a highly successful year, and look forward to seeing a great number of women in Berkeley.

Cordially, Mrs. G. N. Miller.

Program

Sunday, June 25, 1950

8:00 P.M.—Nominating Committee.

Monday, June 26, 1950

9:00 A.M.—Registration.

12:30 P.M.—Luncheon and Entertainment-Business Meeting.

8:00 P.M.—Social Gathering and Card Party, City Women's Club.

Tuesday, June 27, 1950

10:00 A.M.—Executive Committee Meeting.

1:00 P.M.—Sight Seeing Trip.

7:30 P.M.—Banquet, Entertainment and Dance.

Wednesday, June 28, 1950

—Breakfast, Shopping Tours.

Physiology of the Ruminant Stomach in Relation to Bloat and Feed Consumption*

By H. H. COLE, *Division of Animal Husbandry, University of California, Davis*

The digestive system of the ruminant is both unique and intriguing. The first stomach, or rumen, of the 1,000 pound cow is capable of holding about 250 pounds of feed and H_2O . It takes about three days to empty this compartment and thus the cow literally carries its own feedbin. Furthermore, the rumen serves as a stove. The temperature of the food mass within the rumen is a degree or two above that of body temperature. This is because of fermentation changes occurring in the rumen due to the bacteria, yeasts and other microorganisms which are normally present. In the human stomach, microorganisms are killed by the action of the HCl in gastric juice whereas in the cow the ingesta does not come in contact with gastric juice until it reaches the fourth stomach. This heat, liberated as the result of bacterial action, helps to maintain normal body temperatures of ruminants in very cold climates providing, of course, that the animals are well fed.

Another interesting feature of digestion in the ruminant is that the cow and sheep need not chew their feed finely while eating; they have a special mechanism for regurgitating their food and ruminating at their leisure. Thus they are able to consume large amounts of feed in a relatively short time. However, the fact that the cow does not chew its feed thoroughly while eating is a handicap in certain respects. For example, if a cow is given whole shelled corn, about 50 per cent of the kernels will pass through the digestive tract undigested.¹ Sheep, on the other hand, chew corn more thoroughly while eating, and thus grinding for sheep is not necessary. This explains why it is practical to follow steers on shelled corn with hogs so that the hogs may utilize the corn in the manure.

The digestive system of ruminants is also unique in that certain food constituents are manufactured in the rumen by the action of the microorganisms. The ruminant is able to convert urea to protein and there is, furthermore, a production of some of the water soluble vitamins in the rumen as shown by the work of McElroy and Goss.²

Probably the rumen developed in certain animals as a protective measure. However, let us not get involved in teleological considerations—i. e. doctrines as to why the cow and sheep have a rumen, but let us take it as an accepted fact that they have one and proceed to the discussion of some physiological activities of the rumen which are of practical concern.

Physiology of Rumination

Since rumination is so intimately tied up with the well-being of ruminants, let us begin with a discussion of this interesting physiological activity. As a youngster, I well remember of dairymen telling about cows being off-feed because they had lost their cud. It is true that rumination is an index of the well being of the digestive tract of the cow, but it is not true that they are sick primarily because they do not ruminate.

Studies on rumination date back to the work of the great French physiologist, Flourens, who studied ruminal activity in a cow with a rumen fistula. Several workers in Germany became interested in the problem of ruminal physiology about 1910 and studies have been intermittent since that time. The first studies on rumination in this country were made by Bergman and Dukes³ and by Schalk and Amadon.¹ The latter workers gave us, for the first time, a clear picture as to how rumination was initiated. They found the act could be initiated simply by drawing a wisp of hay over the rumen walls by inserting the hand through a fistulous opening. Their suspicion that coarse roughage in the rumen was responsible for the reflex was aroused by published reports that animals fed solely on concentrates failed to ruminate.

On a diet of alfalfa hay and concentrates, a cow will ruminate about 6 hours daily and each ruminating period lasts about 15 minutes. In other words, she begins a new ruminating period once each hour of the day. Since there is always coarse roughage in the rumen, why don't cows ruminate constantly when not eating? Some recent findings in regard to the functioning of centers in the spinal cord and brain give us a tentative answer to this question. It seems that the stimulation of receptor organs of sensory nerve fibres terminating in the rumen results in a flow of nerve impulses over the nerve. Activity of these sensory fibres stimulate motor fibres in the brain or cord. The motor fibres, however, do not become active at once but must be stimulated repeatedly. Anyone who has driven a lazy horse will know what I mean—it is necessary to stimulate the horse several times with a whip before she gets underway. After some prodding, these motor fibres do become active and they in turn stimulate activity in the muscles involved in the regurgitation of food.

To regurgitate, i. e., to bring food from the rumen back to the mouth, involves the coordinated action of several sets of muscles. First, the reticulum or second stomach contracts strongly and this floods the opening of

*Presented before A. H. Livestock Day, Feb. 11, 1950, at Davis, California.

the esophagus into the rumen with a soupy-like mass of food. At the same moment the cow inspires and this tends to suck the soupy material into the esophagus. Finally, antiperistalsis of the esophagus carries the food to the mouth. This involves a high degree of teamwork. After the food is chewed, the cow swallows and brings up a second "cud" in the same fashion. How long the cow continues to ruminate depends upon the nature of the diet. If the diet contains a large amount of prickly material such as Sudan grass, the sensory fibres are stimulated strongly and thus rumination may continue for 60 to 70 minutes. If, on the other hand, the cow is fed fine leafy alfalfa, there is less stimulation and the act may last only 3 or 4 minutes. In other words, the length of time it takes for the center in the brain to become tired depends upon how much it is prodded by sensory impulses.

There is no more peaceful scene than a herd of cows lying down, leisurely chewing their cuds. What's more, there is no surer sign that all is well with the digestive tract of the cow. I should not like to leave the impression that lack of rumination in itself actually means that a cow is sick. For instance, cows may be pasturing on alfalfa or Ladino and ruminate very little and still not be sick. However, it can be taken as a danger signal, because if they are not ruminating, it is very likely that they will bloat.

Eruption or Belching and Its Relation to Acute Bloat

Let us next consider another reflex involving the normal functioning of the rumen—i.e. belching or eructation of ruminal gas. In 1913, Wild in Germany studied eructation in cattle, sheep and goats and concluded that it is a normal and absolutely necessary process in ruminants. This conclusion has been verified by subsequent investigations. Studies by Cole, Mead and Kleiber⁴ showed that about 1 cubic foot of gas is produced in the rumen per hour. Not more than 25 per cent of this gas is absorbed into the blood and expelled through the lungs according to calculations made by Dr. Kleiber.⁵ The other 75 per cent must be expelled by belching.

There was a time when the opinion was common that ruminal gas in appreciable amounts was produced only on certain types of diet and this accounted for the fact that bloat did not occur on other diets. We found, however, a high gas production on the non-bloat-pro-

voking diet of alfalfa hay and grain—the greater the feed consumption, the higher the gas production. This led us to consider the problem of bloat in a different light.* If acute bloat did not depend upon an excessive gas production, what characteristics of the feed were responsible for bloat? Bloat-provoking feeds appeared to have one characteristic in common; namely, they were soft and deficient in coarseness. From the previously mentioned studies of Schalk and Amadon, we were familiar with the fact that coarse material in the diet was essential to induce rumination. Therefore, it occurred to us that the reflex act of eructation was controlled in a similar manner to that of regurgitation. In other words, bloat was due to a lack of sufficient coarse scabrous material in the diet to induce eructation. On the basis of this theory, how could we explain that bloat did not occur when cattle were pastured on green succulent grasses such as blue grass or Sudan grass? Examination of the leaves of these grasses showed that they had barbed surfaces as compared to the downy-like surfaces of legume leaves such as alfalfa or the clovers.

We then proceeded to put this theory to test by pasture experiments.⁶ Lactating dairy cows were turned onto alfalfa pasture. If the pastures were free of grasses and weeds, bloat was produced in a high percentage of the animals. In fact, on several occasions so many animals became severely bloated that it became necessary to remove the animals from the field. If on the contrary, the alfalfa pasture was contaminated with grasses and weeds, the cows would eat the grasses and weeds in preference to the alfalfa and bloat did not develop. Also, it was observed that on fields on which bloat occurred the cows ruminated very little, whereas if bloat did not occur, the animals ruminated in a normal manner. Thus, this added weight to the view that rumination and eructation were reflexes both of which are dependent upon the scratching effect of coarse feeds upon the wall of the rumen.

That brings up the question of the mechanism of eructation. Our studies showed that the act occurred only if the rumen were in an active state of contraction under normal conditions. This does not mean that eructation cannot occur without ruminal contraction under abnormal conditions, as, for instance, if drugs are administered. For example, Clark and Quin⁷ in South Africa found that bloat does not occur if the rumen is paralyzed with potassium cyanide. Under this condition, the esophagus would probably remain open due to relaxation of the cardiac sphincter caused by the drug and thus a reflex mechanism for opening the cardiac orifice becomes superfluous. We have always considered that two factors were essential in eructation: First, the

*The discussion in this paper will be limited to acute bloat depending upon an abnormal feeding regime. It is very important to recognize that there are two main types of bloat—acute and chronic. Chronic bloat extends over a considerable period and is not dependent upon a special feed condition; it may result from partial obstruction of the esophagus by enlarged mediastinal lymph glands, from a defective nervous mechanism necessary to elicit the eructation reflex or to atony of the muscles involved in eructation.

movement of the air pocket anteriorly by contraction of the posterior rumen. These ruminal contractions, occurring at approximately 40 second intervals, are not initiated reflexly, but rather by an intrinsic mechanism—myogenic or neurogenic. Secondly, the air escapes from the rumen when the cardiac sphincter is reflexly relaxed. This relaxation of the sphincter is the part of the act which we have considered to be dependent upon the presence of scabrous feed in the diet. Clark and Quin's studies⁷ make it appear that a posterior ruminal contraction is not essential for moving the air pocket forward in sheep, but they do not show that a reflex mechanism is unessential in opening the cardiac orifice in the normal animal.

There are many theories, other than our own, to explain acute bloat: the toxic substance theory—the toxic substances suggested being carbon monoxide, H_2S and cyanide; the saponin theory, the piling up theory, etc. Quin⁸ believes that acute bloat is due to frothing because of the presence of saponins in legumes. Although we have produced several hundred cases of acute bloat in cattle on alfalfa pasture experimentally, we have seen very few instances of frothy bloat. Recently Quin, Austin and Ratcliff⁹ have reported the treatment of 155 cases of bloat with a highly polymerized methyl silicone to increase surface tension and thus reduce frothiness. They state that 115 cases made perfect recoveries. Some animals were given other treatments concurrently. A fairly high per cent of bloated animals will recover without treatment. Therefore, because other medication was used and because they did not run a control series with no treatment, it is impossible to determine whether the drug had any influence on the recovery of the animals.

If acute bloat depended only upon the scabrous nature of the diet, one should always be able to obtain fatal bloat simply by turning cattle onto succulent legume pasture free of weeds and grasses. Although we can always produce mild bloat on such pastures, we have not always been successful in producing severe bloat. To understand why this is true, we have made extensive studies of feed consumption on different alfalfa fields.^{10, 11} In some instances of very young succulent alfalfa, the cows would eat very little and thus only a mildly bloated condition would result.

The question as to what determines the palatability of alfalfa pasture, or for that matter, the palatability of any forage, is a very interesting one which deserves further study. We¹² have evidence that the amount of H_2O supplied to the plant is an important factor; alfalfa plants growing on top of the checks, which received the least H_2O , were more palatable than alfalfa growing between the checks. In many instances, the cows would

consume all the alfalfa on the checks before eating any of the alfalfa between. Albrecht's work, at the University of Missouri, would indicate that certain mineral deficiencies in the soil reduce the palatability of plants grown on the soil. This work needs confirmation, however, because the experiments were not carefully controlled.

There probably are still undetermined factors which modify the severity of bloat on succulent legumes. For instance, Mead et al.¹² did not always find a direct relationship between the severity of bloat and feed consumption in individual animals. The important role which the physical nature of the diet plays in the etiology of acute bloat is indicated, however, by the fact that the incidence of bloat may be modified simply by changing the physical nature of the diet. For instance, bloat can be produced by feeding finely ground alfalfa hay and concentrates *ad libitum*, whereas if the hay is fed whole, bloat rarely occurs.¹³

Prevention of Bloat

Let us next consider the means of preventing bloat. There are a number of accepted methods for the prevention of acute bloat.

1. Bloat may be prevented by giving cows all the Sudan hay they will consume overnight and then pasturing on alfalfa during the day. The leaves of Sudan are especially rough and scabrous and therefore compensate for the lack of this character in green legumes. The question naturally arises if other roughages can substitute for Sudan hay. Alfalfa hay is definitely less helpful but if it is coarse and yet palatable, it may help in the prevention of bloat. On the other hand, very fine-stemmed alfalfa hay will not prevent bloat on alfalfa pasture. Good oat hay would probably be better than alfalfa but it has not been tested. Barley straw is not effective simply because cows will not eat enough of it.

2. Sudan grass pasture. If cows are pastured on Sudan grass overnight, bloat is prevented on alfalfa pasture the following day. This method appears just as effective as Sudan grass hay.

3. Mixing grasses with legumes. If grasses make up 50 per cent of a grass-legume pasture, experience has shown that there is very little trouble with bloat. The difficulty of this method lies in the fact that the percentage of grasses may vary with the season—in late fall the legumes become predominant and bloat may occur.

4. Let alfalfa pasture reach early bloom stage before pasturing.

Necessity of Coarse Roughage in the Diet of Cattle and Sheep

From the previous discussion, it seems certain that for the normal well-being of cattle, a certain amount of coarse roughage in the diet is an essential. Our studies show that if

lactating dairy cows are fed hay while pasturing on succulent alfalfa, they will consume more than if on pasture and grain alone. Therefore, the feeding of hay to cattle on succulent legumes is necessary not only to prevent bloat but also to obtain maximum food consumption by lactating dairy cows. This does not mean that cattle cannot get along without coarse roughage in the diet. Mead and Goss raised dairy calves to maturity on a roughage-free diet, but it was found necessary to limit feed intake to avoid bloat and going off-feed. Thus their studies, likewise, indicated that roughage is important from a physical point of view in the diet of cattle.

Are these findings applicable to sheep as well? The late Professor Miller and I ran some experiments using feeder lambs to test this point (unpublished). The first group of 16 lambs received only succulent alfalfa pasture. Group 2 received alfalfa pasture plus oat hay and group 3 received alfalfa pasture plus rolled barley. All groups gained at the same rate, 0.3 pound daily, which incidentally is a good rate of gain. None of the lambs bloated throughout the 100 day feeding period. It is almost certain that cattle would have bloated severely on the same fields. Thus it would appear that coarse roughage is less essential in the diet of sheep than in cattle. Apparently, succulent alfalfa provides sufficient stimulus for the induction of eructation in sheep but not in cattle. Some studies by Cox¹⁴ give evidence that sheep do need a certain amount of roughage in their diet. He found that lambs receiving 45 per cent concentrates and 55 per cent roughage did better than lambs receiving either a smaller or greater percentage of roughage.

It thus appears that one cannot determine the value of coarse material in the diet for sheep on the basis of the value of that roughage for cattle. This point is well illustrated by some astonishing findings by Burroughs et al.¹⁵ on the value of corn cobs as a nutrient in the diet of cattle. In cattle, they found that 100 pounds of corn cobs would replace about 60 pounds of shelled corn; or stating it another way, that corn cobs were approximately equivalent to alfalfa hay in feeding value. On the other hand, feeding trials with lambs by Bell¹⁶ indicated that the corn cobs had no feeding value. This difference may possibly be explained on the basis that lambs chew their feed finer than cattle and thus the ground cob particles will have a tendency to soak up more rapidly and sink to the bottom of the rumen from where they will pass through the reticulo-omasal orifice to the omasum. As soon as the cobs leave the rumen they are no longer broken down by microorganisms to starch. On the other hand, cattle chew their feed very little while eating and will swallow relatively large particles. These larger particles will

float on top of the rumen contents and thus stay in the rumen longer for the continued action of microorganisms. This explanation may not be the correct one, but at least it is worthy of test.

I have attempted to give you some notion of the host of practical problems in the feeding and management of ruminants which can only be completely answered when we have a complete knowledge of the function of the rumen. Many problems await solution. Since the microflora in the rumen are able to convert cellulose to smaller molecules which can be utilized by the ruminant, it is essential that we know more about the optimal environmental conditions for these organisms to work efficiently. Another problem needing additional study is on how finely ground should roughages and concentrates be for optimal use. We showed we could produce bloat in cattle merely by feeding very finely ground alfalfa plus concentrates. Also cows went off-feed more than animals on whole alfalfa. Thus, it is certain that fine grinding of roughage is contraindicated for cattle. Many days are lost in the feedlot because of animals going off feed. Although our studies would indicate that sufficient coarse roughage will reduce these upsets, we have no means of expressing quantitatively the amount of scabrous material needed in the diet.

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Dr. S. T. Michael Scholarship



Dr. Michael has had word recently of gratifying import in connection with the S. T. Michael Scholarship Fund for Veterinary Students, which was established several years ago at the University of California by Mr. and Mrs. Berthold Guggenheimer as a token of their admiration for his fine contributions to the veterinary profession. From Gerald E. Marsh, Chairman, Committee on Undergraduate Scholarships, comes news that five deserving veterinary students at the University of California's College of Veterinary Medicine are benefiting from the scholarship fund during the present school year. All are war veterans and three are married. The scholarship committee rates all as deserving young men in need of the help which this fine scholarship provides.

Portrait of Dr. Clarence Haring

This is a reproduction of the oil portrait of Dr. Clarence Haring, hanging in the Veterinary Science Building on the Davis campus.



CLARENCE MELVIN HARING
University of California 1904-1948

First Dean of the School of Veterinary Medicine
1946-1948

Wanted! More Information About Reportable Diseases

By B. T. WOODWARD, D.V.M.

The Division of Animal Industry of the State of California publishes from time to time a tabulation of the number of cases of reportable diseases of livestock of which occurrence it has knowledge. This serves as a reminder to keep California veterinarians on the alert and has undoubted value in building the national picture of the diffusion of animal diseases throughout the United States.

It would seem that local practitioners would locate and diagnose and that more owners would call these veterinarians for suspect cases of communicable diseases if the local veterinarian was kept informed of the occurrence of these diseases within the area of his own general practice.

Prompt knowledge of the presence of such a disease and quick diagnosis would make possible the inauguration of earlier official procedure looking toward control and community protection.

A suggested aid would include action by the State Division of Animal Industry in the issuance of a report not later than the 15th day of each month showing the incidence of diseases reported for the preceding month.

This report would be tabulated by Counties and diseases and would show the number of infected premises and the total number of affected animals of each classification.

The reports for following months would indicate by a symbol whether each center of infection was new or continuing from an earlier month.

State totals would appear at the close of the report. These might include yearly comparisons.

Each County Veterinarian in addition to receiving the regular monthly reports might be supplied with a special report for his County listing the names of the owners of infected livestock and the ranch locations where the cases had been found, together with further official information.

This entire subject of reportable livestock diseases is capable of much beneficial expansion. To obtain these values it is essential that the practicing veterinarians of the State arouse themselves and then continue to show an abiding interest in public welfare and generous cooperation with all official veterinary services.

The California Veterinarian would publish these monthly reports and related information.

Notes from the A.A.H.A. Meeting

April 25-28, 1950, Denver, Colorado

Approximately 25 California Veterinarians attended. The Brown Palace and Shirley-Savoy Hotels proved to be ideal headquarters for a group which numbered nearly 500.

The new Clinic Building at Colorado A & M, Fort Collins, was visited by many at the invitation of Drs. Farquharson and Moss.

Program: Dr. Knisely's presentation on "Structure and Mechanical Functioning of Liver Lobules" and "Sludged Blood" in disease. This was one of the highlights of the program. The film showed the blood corpuscles flowing through the capillaries—the mechanics of the closing of the venous valves, operating in the state of shock and trauma—the sludging of the blood cells—stagnating—clogging and capillaries—the leucocytes in action—engulfing bacteria and foreign matter—etc.

Dr. Leonard: "Canine Obstetrics"—discussed the value of a vaginal smear, microscopic examination to determine the proper day for breeding. In the diagnosis of Pregnancy via X-ray—suggested use of air injected into the abdominal cavity.

Dr. Yarbrough: "Clinical Uses of Blood Urea Determination." Blood urea elevated in Leptospirosis, urine retention, Kidney infection, Trauma to Kidney, Prostate infection, Perineal Hernia and Heartworms. No elevation in contagious Hepatitis. Degree of elevation is not too Diagnostic. Where vomiting is a factor—Blood urea determination is indicated. Also in the Diagnosis and treatment of Heartworm disease.

Dr. Schnelle re-emphasized the degree of elevation is not an accurate guide; i.e., a dog with 40 mg. per cent may be much more sick than one with a reading of 300 mg. Clinicians should not rely on Blood Urea determinations but use it in conjunction with other aids in establishing an accurate diagnosis.

Dr. Knowles: "Oxygen and Oxygen Equipment." Film showing the equipment—oxygen tent and use of trachea tube. In anesthesia, chest surgery, repair of diaphragmatic hernia, pentothal recovery—shock—hemorrhage. Tent used in Pneumonias—Heart disease, etc. Cost of equipment, tent \$79.50, regulator valves \$25.00, Oxygen \$5.00 a tank of 70 cu. ft. lasts about 8 hours, constant use. The use of oxygen is becoming more popular in small animal practice—in many cases of recovery from anesthesia—and shock. Oxygen can spell the difference between recovery and death.

Dr. Dwight Smith and Dr. Meyer Jones discussed "Intravenous Procaine." Solution recommended .2 per cent in 5 per cent Dextrose. 500-700 mg. in a 20-30 lbs. dog for surgical anesthesia. Recovery in 5 to 20 minutes. Uses:

Analgesia—no pain—wide awake—used in myositis—dermatitis—pruritis—shock caused by pain—use in foxtail removal. For Toxic symptoms use ether.

Miscellaneous notes: Deodorizing skunk odor—use soap then ammonia water.

Vitamin A; 50,000 units is a toxic dose in small animals.

Acute retention of urine in cats: Try Piri-dium (Merk) Diet, low ash, i.e., liver, kidney, cream, fish oil (Vitamin A) dose 300-600 units per day.

Dr. Pickett: "Curare." Increasingly popular. Correct dosage $\frac{3}{8}$ unit per lb. body weight. Use Pentothal first, curare second, continue curare if necessary. Effect 9 to 20 minutes. Uses: fracture cases, dislocations, abdominal surgery, difficult foxtail removals in nose, etc. Posterior paralysis—any condition that requires muscular relaxation. Has been used in Caesarean operations using local anesthetic in skin. Used in conjunction with nembutal to relax the abdominal muscles in any abdominal surgery—also used in repair of Diaphragmatic hernia.

Dr. Magrane: "Canine Ophthalmology" (illustrated). In chronic vascular Keratitis, cauterize the affected blood vessel inside the sclera, away from the cornea. For absorbing hemorrhage in the anterior chamber, try Vitamin C and Rutin. In Glaucoma—never use atropine—it adds to the internal pressure. Ulcerative Keratitis—Riboflavin, Vitamin A, intramuscular injections of concentrated omanadin, are useful in treatment.

Dr. Schnelle: "Clinical Interpretations of Laboratory Findings." The white cell count, sedimentation tests, and urinalysis aid in Differential Diagnosis.

In contagious Hepatitis—a typical report showed: increased sedimentation rate, w.b.c. 6,000, urine turbid, indican 3 plus, albuminuria consistent.

Differentiation in acute tonsillitis, the white cell count is high.

A case of Leptospirosis: Urea Nitrogen 104 mg.%; w.b.c. 42,000, urine, low specific gravity (early stages high) later stages low.

Chronic Interstitial Nephritis—follows Leptospirosis.

Laboratory findings—w.b.c. count normal or low, urea nitrogen—average about 70 mg.%. Treatment—advise high cereal diet, and low protein or K/D Prescription food, also low salt intake.

Pyometra—w.b.c. average 25,000. If w.b.c. count is low and all other symptoms point to pyometra take X-ray picture.

Feline Pan-Leucopenia—7,000 w.b.c. or lower is Diagnostic.

OPPORTUNITIES

Position Wanted

Ohio State veterinary senior graduating in June desires working arrangement with mixed or small animal practitioner with possibility of future partnership if mutually satisfactory. Married, Protestant, have car and willing to work. Ask for additional information by card or letter to H.W., c/o of Mr. Charles S. Travers, 3004 16th St., room 208, San Francisco 3, Calif.

* * *

Veterinary student, 4½ years at Michigan State College, needs position with practitioner. Arthur J. Plaurde, Jr., 2035 Lewis Ave., Altadena, Calif.

* * *

Graduate veterinarian, married. California license, one year's experience in general and dairy practice wishes assistantship preferably with dairy practitioner. Address Box DEF, c/o Mr. Charles S. Travers, 3004 16th St., rm. 208, San Francisco 3, Calif.

* * *

Wanted—Opportunity with a future in small animal practice by a capable veterinarian with three years' experience. Christian, married with no children. Will consider assistantship, partnership, lease or purchase. Available July 1, 1950. Address Box XYZ, c/o Mr. Charles S. Travers, 3004 16th St., rm. 208, San Francisco 3, Calif.

* * *

Alejandro Castano Martin, Veterinario, Lino no. 2, Madrid (distr. Tetuan), Spain, would like to become associated with a veterinary practitioner in the U.S.A. 25 years of age, single, graduated from Veterinary College in 1945. Additional training in artificial insemination and sanitary inspection. Writes English well.

* * *

Openings

Veterinarian Wanted: Whose interests are in small animals only. A very promising future to one who is ambitious and can develop ability. Harold Groth, D.V.M., 2600 El Camino Real, San Mateo, California.

* * *

Assistant Wanted

Wanted—Veterinarian to operate small animal hospital (temporarily or permanently beginning in June, attractive locality). Please state age, experience, and details. Write to Box ABC, c/o Mr. Charles S. Travers, rm. 208, 3004 16th St., San Francisco 3, Calif.

In Memoriam

DR. CLARENCE DYKSTRA

Dr. Clarence Dykstra, provost of the University of California at Los Angeles, passed away May 6, 1950, of a heart attack. Dr. Dykstra had been provost of UCLA since 1944. Dr. Robert Gordon Sproul presided at the funeral services.

Dr. Dykstra had formerly been president of the University of Wisconsin and served as the first director of selective service during World War II, and was chairman of the National Defense Mediation Board. He had also served as city manager of Cincinnati.

DR. F. E. BARNES

The California State Veterinary Medical Association learned with extreme regret that Dr. F. E. Barnes of Newman, California, passed away April 13, 1950. His funeral was held on April 17 at the Davis Funeral Chapel where sixteen members of the Northern San Joaquin Valley Veterinary Medical Association acted as honorary pallbearers.

Dr. Barnes graduated from the Kansas City Veterinary College in 1909. He was instrumental in the re-organization of the North San Joaquin Valley Veterinary Medical Association in 1943 and served as their first president. Dr. Barnes joined the California State Veterinary Medical Association in 1944 and had been a loyal and faithful member through these past six years.

DR. GUY O'HARRA

Dr. Guy O'Harra was born in Iowa in 1896 and received his D.V.M. degree from Kansas City Veterinary College in 1917. He practiced in Iowa for a short time after World War I, in which he served overseas, and then inspected meat in Chicago until 1926. In 1926 Dr. O'Harra moved to California. He joined the California State Veterinary Medical Association two times, once in 1934 and again in 1939. He first practiced in Newman, and then Los Banos. In 1933 Dr. O'Harra purchased and operated a dairy in the Le Grand area for 7 years. In 1940 he moved to Merced where he conducted a general practice until 1947 when he became ill and was forced to retire. Dr. O'Harra passed away March 31, 1950, at Ahwahnee Sanitarium after an extended illness from tuberculosis. He is survived by his wife, a son, and a daughter.

Wanted—Graduate veterinarian to assist with mixed practice, mostly small animal. State references and qualifications. R. D. Westfall, Colusa, Calif.

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Delegate, Carl E. Wicketor, 203 Administration Bldg., Union Stock Yards, L. A.
Alternate Delegate, F. P. Wilcox, 808 N. Spring St., Los Angeles, 12.

The Davis Meeting

A combined meeting of the Sacramento Valley Veterinary Medical Association, Redwood Empire Veterinary Medical Association, and Bay Counties Veterinary Medical Association was held under the auspices of Dr. George Hart, Dean of the Veterinary College at Davis, May 9th.

At 4 o'clock in the afternoon a tour of inspection was enjoyed by close to a hundred veterinarians. A caesarean section in a Holstein cow was in progress in the clinic and was witnessed by some early arrivals. Other demonstrations were viewed in the laboratory. Microscopic preparations of bacteria, blood slides, and protozoa were available for study. Excellent clinical notes were prepared and explained by Dr. O. W. Schalm. Dinner was at

6:30 in the college cafeteria. Those responsible for this meal are to be highly praised as it was truly a splendid feast and will long be remembered by those in attendance.

After dinner, the meeting was held in the Veterinary Science Building on the campus. Dr. George Hart opened the meeting with a talk on the program of the Veterinary College—its progress and its problems. He brought out the attempt made to integrate research with teaching. Dr. Hart discussed some of the numerous programs in progress. The development of a public health program and the interest of the USPH group in the college program. The studies in the virus diseases and the projected department of biochemistry. He emphasized the cooperation of the studies in

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 Meetings, second Tuesday of the month.

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Vice-President, Dr. C. T. Lambert.
Secretary-Treasurer, Dr. C. D. Cooper, Rt. 2, Box 26, Visalia.
 Meetings fourth Tuesday of the month.

East Bay VMA

President, Dr. R. J. Tompkins.
Vice-President, Dr. O. A. Soave.
Secretary-Treasurer, Dr. George Eberhart, 2100 San Pablo Ave., El Cerrito.
 Meetings bi-monthly, fourth Wednesday.

Kern County VMA

President, Dr. Bruce Watson.
Vice-President, Dr. Price Edwards.
Secretary-Treasurer, Dr. Richard A. Stiern, 17 Niles St., Bakersfield.

Mid-Coast VMA

President, Dr. E. H. Humphrey.
Vice-President, Dr. Fred B. Pulling.
Secretary-Treasurer, C. Edward Taylor, 2146 Broad St., San Luis Obispo.
Executive Committee, A. M. McCapes, Ben G. Collins.
 Meetings, first Thursday of every even month.

Monterey Bay Area VMA

President, Dr. George Freilruth.
Vice-President, Dr. Charles C. Smith.
Secretary-Treasurer, Dr. C. E. Taylor, 2146 Broad St., San Luis Obispo.
Executive Committee, Drs. Edward Mahler and William Hammond.

Northern San Joaquin Valley VMA

President, Dr. Leslie Burns.
Vice-President, Dr. F. W. Koebel.
Secretary-Treasurer, Dr. V. E. Graff, Box 924, Oakdale.
Executive Committee, Officers and Dr. A. J. Ronsse, Dr. F. E. Barnes and Dr. A. J. Whitaker.
 Meetings, fourth Wednesday of the month.

Orange Belt VMA

President, Dr. R. E. Philbrick.
Vice-President, Dr. R. A. Brunson.
Secretary-Treasurer, Dr. James R. Ketchersid, 666 East Highland Ave., San Bernardino.

Orange County VMA

President, Dr. Mark Lindsey.
Vice-President, Dr. N. D. Cash.
Secretary-Treasurer, Dr. J. H. Bower, P. O. Box 355, Santa Ana.

Peninsula VMA

President, Dr. S. M. Smith.
Secretary-Treasurer, Dr. A. J. Gutknecht, 2895 El Camino Real, Redwood City.
 Meetings, third Monday of the month.

Redwood Empire VMA

President, Dr. Charles Stafford.
Vice-President, Gordon Barr.
Secretary-Treasurer, Dr. John Wion, 3164 Redwood Highway, Santa Rosa.
 Meetings, third Thursday of the month.

Sacramento Valley VMA

President, Dr. Carl Sepponen.
Vice-President, Dr. Robert Goulding.
Secretary-Treasurer, Dr. Paul D. DeLay, Animal Pathology Laboratory, State Office Building No. 1, Sacramento.
 Meetings, fourth Friday of the month.

San Diego County VMA

President, Dr. W. W. Myers.
Vice-President, Dr. F. B. Walker, Jr.
Secretary-Treasurer, Dr. R. J. McFarland, 3621 Jewell St., San Diego.
 Meetings, fourth Tuesday of the month.

San Francisco Veterinarians

President, T. M. McIntyre.
Vice-President, H. P. Carroll.
Secretary-Treasurer, N. T. Freid, 298 Monterey Blvd.
 Meet as a group rather than as an association.

Southern California VMA

President, Dr. H. I. Ott.
First Vice-President, Dr. K. R. Wilcox.
Second Vice-President, Dr. D. H. McDoyle.
Secretary-Treasurer, Dr. Vince Jessup, 910 Crestview Ave., Glendale 2.
Executive Committee, Dr. R. W. Sprowl, Dr. M. H. Harvey, Dr. A. Mack Scott.
 Meetings, third Wednesday of the month.

Tri-Counties VMA

President, T. F. Taylor.
Secretary-Treasurer, Joe Ridgway, 1784 Thompson Blvd., Ventura.
 No regular dates.

basic sciences and the department of clinical medicine. Dr. Hugh Cameron described the operation of the Department of Clinical Medicine, enumerating the numbers and types of cases treated since 1948. Next, Dr. Donald E. Jasper spoke to the group, describing the work of the pathology department, and told how to prepare and ship tissues and stressed how much the school would appreciate case samples for examination and study. Dr. Jasper is currently attending the large animal clinic and performed the caesarean section mentioned above. He is prepared to examine pathological tissues for diagnosis and will undertake autopsies and other studies in an effort to cooperate with the practitioner.

Dr. S. A. Peoples made a few brief remarks on toxicology from the floor.

Dr. Seymour Roberts presented an excellent film entitled: "A Technique for Extracapsular Cataract Extraction in the Dog." The film was preceded by a brief description of the surgery and its advantages over intracapsular extraction.

The Truth, the Whole Truth, and Nothing But

On our application blanks where we ask the question "specialization?" one of our members wrote "fun"; on the registration card at San Luis Obispo last Mid-Winter Conference where we inquired "type of practice," another member wrote "piano."

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Dogs given a single injection of AVIANIZED vaccine intramuscularly in the hind leg solidly resisted challenge by bilateral intramuscular muscle inoculation with a suspension of virulent street virus, while more than 70 per cent of the unvaccinated controls died of rabies.

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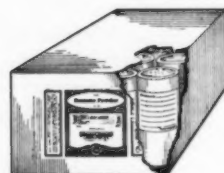
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At the recommended therapeutic dosage, Vermiplex was found to be highly effective against canine ascarides, hookworms and tapeworms.

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Vermiplex combines the activity of methylbenzene against nematodes,² with the taeniocidal action of Di-Phenthane-70.³



Above: Tapeworm scolex
 Center: Hookworms
 Left: Ascarides

Two dosage forms:

Capsule Number 1—

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 and 1 Gm. (15.4 grs.) Di-Phenthane-70.

Usual dose—one capsule number 1 per
 five lbs. body weight, or one capsule
 number 2 per ten lbs.

1. Blair, H. E.: Unpublished data.

2. Enzie, F. D.: Proc. Helm. Soc. Wash. 14:35-44 (Jan) 1947.

3. Craigie, A. H. Jr., and Kleckner, A. L.: North Am. Vet. 27:26-30 (Jan) 1946.

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*Please note the article entitled "ANTHELIN—A NEW COMPOUND FOR REMOVING TAPEWORMS AND ROUNDWORMS FROM DOGS" by Kartsonis and Austin in April, 1950 issue of A. V. M. A. Journal.



Actual photo of the complete elimination of tapeworms, including heads, after a therapeutic dose of Anthelin.

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ANTHELIN is an entirely new drug, synthesized through exclusive and extensive Jen-Sal research.

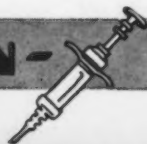
Highly efficient, for under controlled experiments, Anthelin removed 97 per cent of canine tapeworms (including heads) and 91 per cent of canine ascarids.

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